



ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R09-OAR-2016-0292; FRL-9949-06-Region 9]

Approval and Revision of Air Plans; Arizona; Regional Haze State and Federal Implementation Plans; Reconsideration

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve a source-specific revision to the Arizona State Implementation Plan (SIP) that addresses requirements for best available retrofit technology (BART) at Cholla Generating Station (Cholla). The EPA proposes to find that the SIP revision fulfills the requirements of the Clean Air Act (CAA) and the EPA's Regional Haze Rule (RHR) for BART at Cholla. In conjunction with this proposed approval, we propose to withdraw those portions of the federal implementation plan (FIP) that address BART for Cholla. We previously partially granted petitions for reconsideration of that FIP from Cholla's owners, Arizona Public Service Company (APS) and PacifiCorp. We are now proposing to find that final withdrawal of the FIP, as it applies to Cholla, would constitute our action on APS's and PacifiCorp's petitions for reconsideration of the FIP.

DATES: Written comments must be received on or before **[insert date 45 days after date of publication in the Federal Register]**. Requests for public hearing must be received on or before **[insert date 15 days after date of publication in the Federal Register]**.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R09-OAR-2016-0292 at <http://www.regulations.gov>, or via email to limaye.vijay@epa.gov. For comments submitted at Regulations.gov, follow the online instructions for submitting comments. Once submitted,

comments cannot be edited or removed from Regulations.gov. For either manner of submission, the EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the “For Further Information Contact” section. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www2.epa.gov/dockets/commenting-epa-dockets>.

FOR FURTHER INFORMATION CONTACT: Vijay Limaye, U.S. EPA, Region 9, Planning Office, Air Division, Air-2, 75 Hawthorne Street, San Francisco, CA 94105. Vijay Limaye can be reached at telephone number (415) 972-3086 and via electronic mail at limaye.vijay@epa.gov.

SUPPLEMENTARY INFORMATION: Throughout this document, “we,” “us” and “our” refer to the EPA.

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I. General Information

A. Definitions

For the purpose of this document, we are giving meaning to certain words or initials as follows:

- The words or initials *Act* or *CAA* mean or refer to the Clean Air Act, unless the context indicates otherwise.
- The initials *ADEQ* mean or refer to the Arizona Department of Environmental Quality.
- The initials *AFUDC* mean or refer to Allowance for Funds Used During Construction.
- The initials *APS* mean or refer to Arizona Public Service Company.
- The words *Arizona* and *State* mean the State of Arizona.
- The initials *BART* mean or refer to Best Available Retrofit Technology.
- The term *Class I area* refers to a mandatory Class I Federal area.¹
- The initials *CBI* mean or refer to Confidential Business Information.
- The initials *CCM* mean or refer to the EPA's Control Cost Manual.
- The words *EPA*, *we*, *us* or *our* mean or refer to the United States Environmental Protection Agency.
- The initials *FIP* mean or refer to Federal Implementation Plan.
- The initials *LNB* mean or refer to low-NO_x burners.

¹ Although states and tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to "mandatory Class I Federal areas."

- The initials *MMBtu* mean or refer to million British thermal units
- The initials *NO_x* mean or refer to nitrogen oxides.
- The initials *OFA* mean or refer to over fire air.
- The initials *PM₁₀* mean or refer to particulate matter with an aerodynamic diameter of less than 10 micrometers.
- The initials *RHR* mean or refer to the EPA's Regional Haze Rule.
- The initials *RP* mean or refer to Reasonable Progress.
- The initials *RPG* or *RPGs* mean or refer to Reasonable Progress Goal(s).
- The initials *SCR* mean or refer to Selective Catalytic Reduction.
- The initials *SIP* mean or refer to State Implementation Plan.
- The initials *SNCR* mean or refer to Selective Non-catalytic Reduction
- The initials *SOFA* mean or refer to separated over fire air.
- The initials *SO₂* mean or refer to sulfur dioxide.

B. Docket

The EPA has established docket number EPA-R09-OAR-2016-0292 for this action. Generally, documents in the docket for this action are available electronically at <http://www.regulations.gov> or in hard copy at EPA Region IX, 75 Hawthorne Street, San Francisco, California 94105-3901. While all documents in the docket are listed at <http://www.regulations.gov>, some information may be publicly available only at the hard copy location (e.g., copyrighted material, large maps, multi-volume reports), and some may not be available in either location (e.g., confidential business information (CBI)). To inspect the hard copy materials, please schedule an appointment during normal business hours with the contact

listed in the **FOR FURTHER INFORMATION CONTACT** section.

C. Public Hearings

If anyone contacts the EPA by [insert date 15 days after date of publication in the **Federal Register**] requesting to speak at a public hearing, the EPA will schedule a public hearing and announce the hearing in the Federal Register. Contact Vijay Limaye at (415) 972-3086 or at limaye.vijay@epa.gov to request a hearing or to determine if a hearing will be held.

II. Background

A. Statutory and Regulatory Background

This section provides a brief overview of the requirements of the CAA and RHR, as they apply to this particular action. Please refer to our previous rulemakings on the Arizona Regional Haze SIP for additional background regarding the visibility protection provisions of the CAA and the RHR.²

In section 169A of the 1977 Amendments to the CAA, Congress created a program for protecting visibility in the nation's national parks and wilderness areas. This section of the CAA establishes as a national goal the “prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution.”³ It also directs states to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, section 169A(b)(2)(A) of the CAA requires states to revise their SIPs to contain such measures as may be necessary to make reasonable progress towards the natural visibility goal, including a requirement that certain categories of existing major stationary sources

² 77 FR 42834, 42837-42839 (July 20, 2012), (Arizona Regional Haze “Phase 1” Rule) 77 FR 75704, 75709-75712 (December 21, 2012), (Arizona Regional Haze “Phase 2” Rule).

³ 42 U.S.C. 7491(a)(1).

built between 1962 and 1977 (known as “BART-eligible” sources) procure, install, and operate BART. In the 1990 CAA Amendments, Congress amended the visibility provisions in the CAA to focus attention on the problem of regional haze, which is visibility impairment produced by a multitude of sources and activities located across a broad geographic area.⁴

In 1999, we promulgated the RHR, which requires states to develop and implement SIPs to ensure reasonable progress toward improving visibility in mandatory Class I Federal areas (Class I areas)⁵ by reducing emissions that cause or contribute to regional haze.⁶ Under the RHR, states are directed to conduct an analysis and make a BART determination for each BART-eligible source that may be anticipated to cause or contribute to any visibility impairment in a Class I area.⁷ In particular, under CAA section 169A(g)(2) and 40 CFR 51.308(e)(1)(ii)(A), states must analyze and consider the following five factors as part of each source-specific BART analysis: (1) the costs of compliance of each technically feasible control technology, (2) the energy and non-air quality environmental impacts of compliance of the control technologies, (3) any existing pollution control technology in use at the source, (4) the remaining useful life of the source, and (5) the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology (collectively known as the “five-factor BART analysis”).

In 2005, the EPA published the Guidelines for BART Determinations under the Regional Haze Rule at Appendix Y to 40 CFR part 51 (“BART Guidelines”) on July 6, 2005. The BART Guidelines assist states in determining which of their sources should be subject to the BART

⁴ See CAA section 169B, 42 U.S.C. 7492.

⁵ Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6000 acres, wilderness areas and national memorial parks exceeding 5000 acres, and all international parks that were in existence on August 7, 1977. 42 U.S.C. 7472(a). When we use the term “Class I area” in this action, we mean a “mandatory Class I Federal area.”

⁶ See generally 40 CFR 51.308.

⁷ 40 CFR 51.308(e).

requirements and in determining appropriate emission limits for each such “subject-to-BART” source. In making BART determinations for fossil fuel-fired electric generating plants with a total generating capacity in excess of 750 megawatts, states must use the approaches set forth in the BART Guidelines. States are encouraged, but not required, to follow the BART Guidelines in making BART determinations for other types of sources. In lieu of requiring source-specific BART controls, states also have the flexibility to adopt an alternative measure as long as the alternative provides greater reasonable progress towards natural visibility conditions than BART (i.e., the alternative must be “better than BART”).⁸

In addition to the visibility protection requirements of the CAA and the RHR, SIP revisions concerning regional haze are also subject to the general requirements of CAA section 110. In particular, they are subject to the requirement in CAA section 110(l) that SIP revisions must not “interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in [CAA section 171]), or any other applicable requirement of [the CAA],” as well as the requirement in CAA section 110(a)(2)(A) that SIPs must include enforceable emission limits.

B. Cholla Generating Station

Cholla Generating Station consists of four primarily coal-fired electricity generating units with a total plant-wide generating capacity of 1,150 megawatts. Unit 1 is a 126 MW tangentially-fired, dry-bottom boiler that is not BART-eligible. Units 2, 3 and 4 have capacities of 272 MW, 272 MW and 410 MW, respectively, and are tangentially-fired, dry-bottom boilers that are each BART-eligible. Units 1, 2, and 3 are owned and operated by APS and Unit 4 is owned by PacifiCorp and operated by APS.

C. Summary of State Submittals and EPA Actions

⁸ 40 CFR 51.308(e)(2).

1. 2011 Arizona Regional Haze SIP

On February 28, 2011, the Arizona Department of Environmental Quality (ADEQ) submitted a Regional Haze SIP under Section 308 of the RHR (“Arizona Regional Haze SIP”) to EPA. This submittal included BART analyses and determinations for nitrogen oxides (NO_x), particulate matter with an aerodynamic diameter of less than 10 micrometers (PM₁₀), and sulfur dioxide (SO₂) at Cholla Units 2, 3, and 4. ADEQ's BART analyses for Cholla included the following seven steps:

- Step 1: Identify the Existing Control Technologies in Use at the Source,
- Step 2: Identify All Available Retrofit Control Options,
- Step 3: Eliminate All Technically Infeasible Control Options,
- Step 4: Evaluate Control Effectiveness of Remaining Technologies,
- Step 5: Evaluate the Energy and Non-Air Quality Environmental Impacts and Document Results,⁹
- Step 6: Evaluate Visibility Impacts, and
- Step 7: Select BART.¹⁰

2. 2012 EPA Action on Arizona Regional Haze SIP and FIP

On December 5, 2012, we issued a final rule approving in part and disapproving in part ADEQ's BART determinations for three sources, including Cholla.¹¹ We found that ADEQ's overall approach to conducting BART analyses and its implementation of the first four steps of its approach were generally reasonable and consistent with the RHR and the BART Guidelines.

⁹ We note that, while ADEQ referred to its Step 5 as an evaluation of energy and non-air quality environmental impacts, this step also includes consideration of the costs of compliance and the remaining useful life of the source, consistent with the BART Guidelines, 40 CFR part 51, appendix Y, section IV.D.4.

¹⁰ Arizona Regional Haze SIP Revision, Appendix D, section XI.

¹¹ 77 FR 72511.

However, we found significant flaws in ADEQ's implementation of the last three steps. In particular, under step 5, we found that the costs of compliance were not calculated in accordance with the BART Guidelines; under step 6, we found that the visibility benefits were not appropriately evaluated and considered; and under step 7, we found that ADEQ did not provide a sufficient explanation and rationale for its determinations.¹² As a result of these flaws, we disapproved ADEQ's BART determinations for NO_x at Cholla Units 2, 3, and 4. We also found that the SIP lacked enforceable emission limits for all units and pollutants. In the same action, we promulgated a FIP for the disapproved portions of the SIP, including NO_x BART determinations for Units 2, 3, and 4. We determined that BART for NO_x at Units 2, 3, and 4 was an emission limit of 0.055 pounds per million British thermal units (lb/MMBtu) determined as an average across the three units, based on a rolling 30-boiler-operating-day average, which is achievable with the use of low-NO_x burners (LNB), overfire air (OFA) and selective catalytic reduction (SCR). The compliance date for the NO_x BART emission limit is December 5, 2017. In addition, we established an SO₂ removal efficiency requirement of 95 percent for the scrubbers on Cholla Units 2, 3 and 4. Cholla Units 3 and 4 were required to achieve this removal efficiency by December 5, 2013, and Cholla Unit 2 was required to comply by April 1, 2016. We also established requirements for equipment maintenance, monitoring, recordkeeping, and reporting for all units and all pollutants.

3. 2015 APS Application for Significant Permit Revision for Cholla Generating Station

On January 15, 2015, APS and PacifiCorp submitted an "Application for Significant Permit Revision and Five-Factor BART Reassessment for Cholla" to ADEQ. APS and PacifiCorp requested that ADEQ conduct a revised BART analysis and determination based on new facts

¹² See 77 FR 42834, 42840-42941.

(“BART Reassessment”) and submit this BART Reassessment to the EPA as a revision to the Arizona Regional Haze SIP. Under the Cholla BART Reassessment, APS and PacifiCorp would commit to the following measures in lieu of implementing the FIP requirements for the Cholla Generating Station:

- Unit 2 would be permanently shut down by April 1, 2016;
- Unit 3 and Unit 4 would continue to operate with currently installed LNB and separated over fire air (SOFA). In addition, by April 30, 2025, APS and PacifiCorp would permanently cease burning coal at both units with the option to convert to pipeline-quality natural gas by July 31, 2025, with a ≤ 20 percent annual average capacity factor.

4. 2015 Arizona Regional Haze SIP Revision for Cholla Generating Station

On October 22, 2015, ADEQ submitted a revision to the Arizona Regional Haze SIP that incorporates the Cholla BART Reassessment (“Cholla SIP Revision”). The Cholla SIP Revision is the subject of this proposal.

III. Summary of the Cholla SIP Revision

The Cholla SIP Revision consists of a revised BART analysis and determination for NO_x at Cholla, an analysis under CAA section 110(l), and a revision to Cholla’s operating permit (“Cholla Permit Revision”)¹³ to implement both the revised BART determination for NO_x and ADEQ’s prior BART determinations for SO₂ and PM₁₀ at Cholla. If fully approved by the EPA, the Cholla SIP Revision would fill the gap in the Arizona Regional Haze SIP that resulted from the EPA’s disapproval of ADEQ’s BART determinations for NO_x at Cholla Units 2, 3, and 4 and the

¹³ Cholla BART SIP Revision, Appendix A Significant Permit Revision No. 61713 to Operating Permit No. 53399 for Arizona Public Service Company Cholla Generating Station (October 16, 2015).

lack of enforceable emission limits for all units and pollutants. Accordingly, full approval of the Cholla SIP Revision would enable the EPA to withdraw the provisions of the Arizona Regional Haze FIP that apply to Cholla.

In the Cholla SIP Revision, ADEQ determined that, if Unit 2 were shut down by April 1, 2016, no BART determination for Unit 2 would be necessary “because the enforceable shutdown date is within the five-year BART window.”¹⁴ For Units 3 and 4, ADEQ performed a revised BART analysis, taking into account the new requirements that would be imposed as part of the Cholla BART Reassessment. This re-analysis and the resulting BART determinations are summarized in the following sections.

A. BART Re-Analysis for Cholla Units 3 and 4

ADEQ’s BART re-analysis for Units 3 and 4 consists of an evaluation of each of the five BART factors, effectively replacing step 5 (evaluation of costs of compliance, energy and non-air quality environmental impacts, and remaining useful life) and step 6 (evaluation of visibility benefits) of ADEQ’s prior BART analysis for Cholla in the Arizona Regional Haze SIP.

1. Cost of Compliance

ADEQ evaluated the costs of compliance for three control options: (1) LNB and SOFA, (2) SNCR with LNB and SOFA, and (3) SCR with LNB and SOFA. Two fuel-use scenarios were used as a comparison: (1) twenty years of operation on coal and (2) eight years of operation on coal followed by twelve years of operation on natural gas (as provided for under the BART Reassessment). The cost-effectiveness values for each control option under each of these scenarios are shown in Tables 1 and 2. For all options, the costs associated with the BART Reassessment are due to lower utilization periods (coal firing until 2025 instead of for 20 years) as well as

¹⁴ Cholla SIP Revision, section 2.2, page 4.

significantly lower NO_x emissions after conversion to natural gas.

TABLE 1 – COST-EFFECTIVENESS OF NO_x CONTROL OPTIONS AT CHOLLA ASSUMING 20 YEARS OF OPERATION ON COAL

Unit	Control option	Average			Incremental ^a		
		Annual cost (\$/year)	Emission reduction relative to baseline (ton/year)	Average cost-effectiveness (\$/ton)	Incremental annual cost (\$/year)	Incremental emission reduction (ton/year)	Incremental cost-effectiveness (\$/ton)
3	LNB and SOFA	\$483,300	1,219	\$396	-	-	-
	SNCR with LNB and SOFA	\$3,070,443	1,911	\$1,607	\$2,587,143	691	\$3,742
	SCR with LNB and SOFA	\$9,448,912	3,300	\$2,838	\$8,965,612	2,110	\$4,248
4	LNB and SOFA	\$673,550	1,756	\$384	-	-	-
	SNCR with LNB and SOFA	\$4,086,366	2,643	\$1,546	\$3,412,816	887	\$3,848
	SCR with LNB and SOFA	\$13,590,853	4,408	\$3,083	\$12,917,303	2,652	\$4,871

^aThe incremental cost effectiveness results for SNCR and SCR are based on the emission and cost differences between these technologies and the proposed LNB +SOFA option.

TABLE 2 – COST-EFFECTIVENESS OF NO_x CONTROL OPTIONS AT CHOLLA ASSUMING 8 YEARS OF OPERATION ON COAL AND 12 YEARS OF OPERATION ON NATURAL GAS

Unit	Control option	Average			Incremental		
		Annual cost (\$/year)	Emission reduction relative to baseline (ton/year)	Average cost-effectiveness (\$/ton)	Incremental annual cost (\$/year)	Incremental emission reduction (ton/year)	Incremental cost-effectiveness (\$/ton)
3	LNB and SOFA	\$411,300	488	\$843	-	-	-
	SNCR with LNB and SOFA	\$2,497,743	786	\$3,177	\$2,086,443	299	\$6,989
	SCR with LNB and SOFA	\$8,716,452	1,387	\$6,286	\$8,305,152	899	\$9,237
4	LNB and SOFA	\$571,550	702	\$814	-	-	-
	SNCR with LNB and SOFA	\$3,283,930	1,085	\$3,027	\$2,712,380	383	\$7,091
	SCR with LNB and SOFA	\$12,480,744	1,833	\$6,810	\$11,909,194	1,130	\$10,539

2. Energy and Non-Air Environmental Impacts

ADEQ indicated that the energy impacts of LNB, SOFA, and SNCR are minimal and that there are no non-air quality environmental impacts associated with LNB and SOFA. ADEQ also noted that SNCR and SCR would result in ammonia slip and that the transport and handling of anhydrous ammonia presents potential safety hazards.

3. Existing Air Pollution Controls

ADEQ noted that, under the Cholla BART Reassessment, use of the existing LNB and SOFA would be continued at Units 3 and 4. ADEQ proposed no additional controls for these two units. Unit 2 would be shut down in April 2016, while Unit 1 (the non-BART unit) would cease burning coal in 2025.

4. Remaining Useful Life

ADEQ used a 20-year amortization period in order to calculate the costs of compliance for Units 3 and 4 because neither unit is subject to an enforceable shutdown date.

5. Degree of Visibility Improvement

ADEQ included the results of modeling conducted by APS and PacifiCorp to predict the degree of visibility improvement associated with the three BART scenarios. This modeling predicted visibility impacts at the thirteen Class I areas within 300 km of the Cholla facility under a baseline scenario (based on 2001-2003 emissions with all four units operating), as well as the three BART control scenarios:

- BART Option 1: Unit 1 with 2001-2003 baseline controls (pre-LNB), Unit 2 shut down, LNB/SOFA on Units 3 and 4;
- BART Option 2: Unit 1 with 2001-2003 baseline controls (pre-LNB), Unit 2 shut down, LNB/SOFA and SNCR on Units 3 and 4; and
- BART Option 3: Unit 1 with 2001-2003 baseline controls (pre-LNB), Unit 2 shut down, LNB/SOFA and SCR on Units 3 and 4.

APS and PacifiCorp used CALPUFF version 5.8 and incorporated meteorological data for 2001-2003, an assumption of 1.0 part per billion background concentration for ammonia, and “Method 8b” 20 percent best days background conditions for all cases. The results of this

modeling are shown in Tables 3 and 4.

TABLE 3 - PREDICTED VISIBILITY IMPACTS (22ND HIGHEST DELTA-DV OVER 3-YEAR PERIOD)

Class I Area	Baseline	BART Option 1 (LNB/SOFA)	BART Option 2 (LNB/SOFA/S NCR)	BART Option 3 (LNB/SOFA/S CR)
Petrified Forest NP	5.31	4.33	4.05	3.55
Grand Canyon NP	3.40	1.79	1.62	1.20
Capitol Reef NP	2.19	1.04	0.91	0.62
Mazatzal WA	2.23	0.96	0.87	0.69
Sycamore Canyon WA	2.27	1.00	0.88	0.67
Mount Baldy WA	2.10	0.97	0.85	0.62
Gila WA	1.53	0.53	0.47	0.39
Sierra Ancha WA	2.28	1.05	0.97	0.81
Mesa Verde NP	2.08	0.88	0.78	0.60
Galiuro WA	0.96	0.34	0.31	0.27
Superstition WA	2.00	1.00	0.93	0.73
Saguaro NP	0.70	0.22	0.22	0.20
Pine Mountain WA	1.64	0.67	0.59	0.48

TABLE 4 PREDICTED VISIBILITY IMPROVEMENT OVER THE BASELINE VISIBILITY IMPACTS (22ND HIGHEST DELTA-DV OVER 3-YEAR PERIOD)

Class I Area	BART Option 1 (LNB/SOFA)	BART Option 2 (LNB/SOFA /SNCR)	BART Option 3 (LNB/SOFA /SCR)	Option 2 over Option 1	Option 3 over Option 1
Petrified Forest NP	0.98	1.26	1.77	0.28	0.79
Grand Canyon NP	1.61	1.78	2.20	0.17	0.59
Capitol Reef NP	1.15	1.28	1.57	0.13	0.42
Mazatzal WA	1.27	1.36	1.54	0.09	0.27
Sycamore Canyon WA	1.27	1.39	1.60	0.12	0.33
Mount Baldy WA	1.14	1.26	1.48	0.12	0.34
Gila WA	1.00	1.06	1.14	0.06	0.14
Sierra Ancha WA	1.22	1.30	1.47	0.08	0.25
Mesa Verde NP	1.21	1.30	1.49	0.09	0.28
Galiuro WA	0.62	0.65	0.69	0.03	0.07
Superstition WA	1.00	1.07	1.28	0.07	0.28
Saguaro NP	0.48	0.49	0.50	0.01	0.02
Pine Mountain WA	0.97	1.04	1.16	0.07	0.19
Cumulative	13.92	15.24	17.89	1.32	3.97
Average	1.07	1.17	1.38	0.10	0.31

B. BART Determination for Cholla Units 3 and 4

ADEQ's BART determination for Cholla Units 3 and 4 in the Cholla SIP Revision effectively replaces step 7 (select BART) of its prior BART analysis for NO_x BART for Cholla in the Arizona Regional Haze SIP. In making this determination, ADEQ compared the three emission control options (LNB and SOFA, SNCR with LNB and SOFA, SCR with LNB and SOFA). For Option 1, it found that the LNB and SOFA controls could be installed at reasonable cost-effectiveness and would deliver visibility improvements ranging from 0.48 to 1.61 dv over baseline conditions across thirteen Class I areas. For Option 2, it found the SNCR control option to be too costly in comparison to the small additional visibility benefits it would be expected to deliver. For Option 3, ADEQ noted that the visibility benefits of SCR (3.97 dv cumulative incremental visibility improvement) would only last until 2025 when coal firing would cease, after which the incremental benefits of SCR would be "negligible." Based on its analysis, ADEQ found Option 1 (LNB with SOFA) to be BART for NO_x at Cholla Units 3 and 4. The rolling 30-boiler-operating-day NO_x emission limits associated with this BART determination are 0.22 lb/MMbtu (effective until April 30, 2025), which reflects the use of coal, and 0.080 lb/MMbtu (effective May 1, 2025), which reflects the use of natural gas.

C. 110(l) Analysis

In addition to the BART re-analysis and determinations, the Cholla SIP Revision also includes a demonstration of "noninterference" under CAA section 110(l). In particular, ADEQ considered whether the Cholla SIP Revision would interfere with (1) any applicable requirement concerning attainment of any National Ambient Air Quality Standards (NAAQS) or (2) any other applicable requirement of the CAA.

1. Demonstration of Noninterference with NAAQS Attainment

ADEQ noted that Cholla is located in Navajo County, Arizona, which is currently designated as attainment or unclassifiable for the following NAAQS: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃) (2008 NAAQS), PM_{2.5} (1997 and 2006 NAAQS), PM₁₀, and SO₂ (1971 NAAQS). ADEQ also noted that it has recommended an attainment/unclassifiable designation for this area for the 2012 PM_{2.5} and 2010 SO₂ standards.

ADEQ's demonstration of noninterference with attainment focused on the NAAQS for PM₁₀, SO₂, NO₂, and O₃ because ambient levels of these pollutants are affected by emissions of PM₁₀, SO₂, and/or NO_x. Specifically, ADEQ analyzed emissions of PM₁₀, SO₂, and NO_x under the control strategies in the Cholla BART Reassessment, as compared with the existing control requirements in the applicable SIP and FIP. This assessment was conducted by considering revised emissions limits included in the Cholla SIP Revision, summarized in Table 5.

TABLE 5 – EMISSION LIMITS FOR CHOLLA BART REASSESSMENT

		Emission Limit (lb/MMBtu)		
Unit	Dates	NO _x	PM ₁₀	SO ₂
Unit 2	Unit shut down on April 1, 2016			
Unit 3	until April 30, 2025	0.22	0.015	0.15
	after April 30, 2025	0.08	0.01	0.0006
Unit 4	until April 30, 2025	0.22	0.015	0.15
	after April 30, 2025	0.08	0.01	0.0006

For its PM₁₀ analysis, ADEQ found that the emission control strategies in the Cholla BART Reassessment will result in greater PM₁₀ reductions than those in the Arizona Regional Haze SIP beginning in 2016 and continuing into the future, as shown in Table 6. Beginning in 2026, PM₁₀ emissions will be further reduced under the Cholla BART Reassessment, due to the 20 percent capacity factor limit and the more stringent emission limits (0.01 lb/MMBtu rather than 0.015 lb/MMBtu) that will apply after the switch to natural gas at Units 3 and 4. Therefore, ADEQ found

that the Cholla SIP Revision will not interfere with attainment and maintenance of the PM₁₀ NAAQS.

TABLE 6 - COMPARISON OF ANNUAL PM₁₀ EMISSIONS FOR 2011 ARIZONA SIP VS. CHOLLA BART REASSESSMENT

Time Period	Unit Number	Annual PM ₁₀ (tons per year (tpy))	
		2011 AZ SIP	Cholla SIP Revision
2016	Unit 1	84	84
	Unit 2	214 ^a	78 ^b
	Unit 3	197	197
	Unit 4	269	269
	Total	764	628
2017-2025	Unit 1	84	84
	Unit 2	181	0
	Unit 3	197	197
	Unit 4	269	269
	Total	731	550
2026 forward	Unit 1	84	13
	Unit 2	181	0
	Unit 3	197	30
	Unit 4	269	39
	Total	731	82

^a Based on compliance date of April 1, 2016 for emissions limit of 0.015 lb/MMBtu.

^b Based on operation of Unit 2 until April 1, 2016.

ADEQ also compared SO₂ emission control strategies in the 2011 SIP with those in the Cholla BART Reassessment. As shown in Table 7, the control strategies in the Cholla BART Reassessment will result in greater SO₂ reductions than those in the 2011 SIP beginning in 2016 and continuing into the future. Therefore, ADEQ found that the emissions reductions achieved by the control strategy outlined in the Cholla SIP Revision will not interfere with attainment and maintenance of the SO₂ NAAQS.

TABLE 7 - COMPARISON OF ANNUAL SO₂ EMISSIONS FOR 2011 ARIZONA SIP VS. CHOLLA BART REASSESSMENT

Time Period	Unit Number	Annual SO ₂ (tpy)	
		2011 AZ SIP	Cholla SIP Revision
2016	Unit 1	844	844

	Unit 2	1,614	452 ^a
	Unit 3	1,966	1,966
	Unit 4	2,688	2,688
	Total	7,112	5,950
2017-2025	Unit 1	844	844
	Unit 2	1,614	0
	Unit 3	1,966	1,966
	Unit 4	2,688	2,688
	Total	7,112	5,498
2026 forward	Unit 1	844	1
	Unit 2	1,614	0
	Unit 3	1,966	2
	Unit 4	2,688	2
	Total	7,112	5

^a Based on operation of Unit 2 until April 1, 2016.

ADEQ also analyzed the emission control strategies for NO_x in the Cholla BART Reassessment (Unit 2 shutdown and LNB/SOFA controls at Units 3 and 4 until conversion to natural gas by 2025 with a ≤ 20 percent annual average capacity factor) in comparison to the FIP, which requires the installation of SCR with LNB and SOFA at all units by December 5, 2017. As shown in Table 8, while the shutdown of Unit 2 results in lower NO_x emissions than the FIP for 2016, the Reassessment will allow for 4,161 tpy more NO_x emissions than the FIP between 2018 and 2025. However, after 2025, due to the conversion to natural gas, the Cholla BART Reassessment will result in greater annual NO_x emission reductions than the FIP. ADEQ found that, because there are no nonattainment or maintenance SIPs that rely on emission reductions at Cholla to ensure continued attainment of the NO₂ NAAQS and the Cholla BART Reassessment will result in NO_x emission reductions relative to the existing operating conditions of the facility, it will not interfere with attainment or maintenance of the current NO₂ NAAQS.

TABLE 8 - COMPARISON OF NO_x ANNUAL EMISSIONS FOR FIP VS. CHOLLA BART REASSESSMENT

Time Period	Unit Number	Annual NO _x (tpy)		
		EPA FIP	Cholla BART Reassessment	Annual Emission Change (Cholla BART Reassessment to EPA FIP)

2016	Unit 1	1,131	1,131	0
	Unit 2	3,601	900 ^a	-2,701
	Unit 3	2,766	2,766	0
	Unit 4	3,548	3,548	0
	Total	11,046	8,345	-2,701
2017	Unit 1	1,131	1,131	0
	Unit 2	3,601	0	-3,601
	Unit 3	2,766	2,766	0
	Unit 4	3,548	3,548	0
	Total	11,046	7,445	-3,601
2018-2025	Unit 1	1,131	1,131	0
	Unit 2	602	0	-602
	Unit 3	655	2,766	2,111
	Unit 4	896	3,548	2,652
	Total	3,284	7,445	4,161
2026 forward	Unit 1	1,131	105	-1,026
	Unit 2	602	0	-602
	Unit 3	655	244	-411
	Unit 4	896	308	-588
	Total	3,284	657	-2,627

^a Based on operation of Unit 2 until April 1, 2016.

Similarly, with regard to ozone, for which NO_x emissions are a precursor, ADEQ noted that there are no nonattainment or maintenance SIPs that rely on emission reductions at Cholla to ensure continued attainment of the NAAQS and that the Cholla BART Reassessment will result in greater long-term NO_x emission reductions than the existing FIP. Accordingly, ADEQ concluded that the Cholla BART Reassessment will not interfere with the attainment or maintenance of the 2008 ozone NAAQS.

2. Demonstration of Noninterference with Other CAA Requirements

With regards to the other applicable CAA requirements, ADEQ considered whether the Cholla BART Reassessment would interfere with (1) the requirements of the Regional Haze program or (2) the CAA's air toxics requirements.

In evaluating potential interference with the RHR, ADEQ relied primarily on the results of

air quality modeling (using CALPUFF) performed by APS and PacifiCorp to assess the visibility impacts of Cholla under the Cholla SIP Revision compared to the existing SIP and FIP requirements.¹⁵ These results, summarized in Table 9, show that, compared with the existing SIP and FIP requirements, the Cholla SIP Revision would result in less visibility improvement at all affected Class I areas between 2018 and 2025, but would result in greater improvement starting in 2026. Based on these results and taking into consideration the long-term goal of the Regional Haze Rule to achieve natural visibility conditions, ADEQ found that the BART Reassessment will not interfere with the requirements of the regional haze program.

TABLE 9 - MODELED VISIBILITY IMPACTS OF CHOLLA

	EPA FIP and Existing SIP	SIP Revision BART (2018-2025)	SIP Revision BART (2026 forward)
Class I Area	Visibility Impacts (dv)	Visibility Impacts (dv)	Visibility Impacts (dv)
Petrified Forest NP	2.64	3.75	1.45
Grand Canyon NP	1.11	1.48	0.45
Capitol Reef NP	0.62	0.92	0.29
Mazatzal WA	0.75	0.83	0.30
Sycamore Canyon WA	0.73	0.94	0.29
Mount Baldy WA	0.69	0.87	0.28
Gila WA	0.46	0.47	0.17
Sierra Ancha WA	0.82	0.94	0.36
Mesa Verde NP	0.63	0.84	0.30
Galiuro WA	0.29	0.30	0.09
Superstition WA	0.73	0.88	0.30
Saguaro NP	0.20	0.19	0.05
Pine Mountain WA	0.51	0.58	0.17
Cumulative impacts	10.18	12.99	4.50

Concerning air toxics, ADEQ noted that in addition to ceasing operation of Unit 2, the Cholla facility proposes to implement sorbent injection at Units 1, 3, and 4 by March 2016 to

¹⁵ *Id.*

reduce air toxics and achieve compliance with the EPA's Mercury and Air Toxics (MATS) rule. Therefore, ADEQ concluded that the Cholla BART Reassessment will not interfere with any air toxics requirements of the CAA.

D. Cholla Permit Revision

The Cholla Permit Revision, which is incorporated as Appendix A to the Cholla SIP Revision, was issued by ADEQ on October 16, 2015. The Permit Revision incorporates emission limits and compliance dates as well as monitoring, recordkeeping, and reporting requirements to implement both the Cholla BART Reassessment and ADEQ's prior BART determinations for SO₂ and PM₁₀ at Cholla.

IV. The EPA's Evaluation of the Cholla SIP Revision

We have evaluated the Cholla SIP Revision for compliance with the requirements of the CAA, the RHR, and the BART Guidelines.¹⁶ Our evaluation of each of the major components of the Cholla SIP Revision is summarized in the following sections.

A. The EPA's Evaluation of the Enforceable Retirement Provision for Cholla Unit 2

The Cholla Permit Revision requires Unit 2 to be permanently retired by no later than April 1, 2016.¹⁷ This date coincides with the compliance deadlines for SO₂ and PM₁₀ in the Arizona Regional Haze FIP and precedes the deadline for NO_x by over a year.¹⁸ In fact, the unit was shut down on October 1, 2015.¹⁹ If Unit 2 were not retired, APS would have been required to install additional controls to meet the SO₂ and PM₁₀ limits in the SIP, as well as the NO_x limit in the FIP,

¹⁶ CAA section 169A(b)(2) and 40 CFR 51.308(e)(1)(ii)(B) require that BART for each fossil-fuel fired generating power plant having a total generating capacity in excess of 750 megawatts be determined pursuant to the BART Guidelines. Cholla has a total generating capacity in excess of 750 megawatts, so the BART Guidelines are mandatory for the Cholla BART analysis and determination.

¹⁷ Cholla Permit Revision section I.C.1.

¹⁸ See 40 CFR 51.145(f)(4).

¹⁹ Letter from Edward Seal, APS, to Kathleen Johnson, EPA, and Eric Massey, ADEQ (October 28, 2015).

which is achievable with SCR. The requirement for permanent retirement will become effective and federally enforceable when the Cholla SIP Revision is approved into the SIP and the FIP provisions applicable to Cholla are withdrawn.²⁰ Accordingly, we agree with ADEQ that no further analysis is required for Cholla Unit 2, and we propose to approve the requirement for permanent retirement as satisfying the requirements of the CAA and RHR for Cholla Unit 2.

B. The EPA's Evaluation of ADEQ's BART Analysis for Cholla Units 3 and 4

We find that ADEQ's BART analysis for Cholla Units 3 and 4 is consistent with the requirements of the CAA, RHR, and the BART Guidelines. In particular, we find that ADEQ's BART re-analysis addresses the flaws that were the basis for our disapproval of ADEQ's prior BART analysis for Cholla.²¹

With regard to the cost of compliance, in its previous BART analysis for Cholla, ADEQ included certain line item costs not allowed by the EPA Control Cost Manual (CCM),²² such as owner's costs, surcharge, and Allowance for Funds Used During Construction (AFUDC).²³ This approach did not comply with BART Guidelines' direction that cost estimates should be based on the CCM. In the Cholla SIP revision, by contrast, ADEQ used the cost estimates that the EPA developed as part of the Regional Haze FIP,²⁴ which were calculated using the CCM methodology.²⁵

We note that in May 2016, EPA revised the CCM chapter that concerns SCR systems.²⁶ The revised CCM recommends use of a 30-year equipment life for SCR systems,²⁷ whereas the

²⁰ Cholla Permit Revision section I.A.

²¹ See 77 FR 42840-42941 and 42849, 77 FR 72565-72566.

²² EPA Air Pollution Control Cost Manual, available at https://www3.epa.gov/ttn/ecas/cost_manual.html.

²³ See 77 FR 42849.

²⁴ See, e.g., Cholla SIP Revision, Appendix B, Table B-1, footnote (a).

²⁵ See 77 FR 42852.

²⁶ CCM (7th Edition), Section 4, Chapter 2 - Selective Catalytic Reduction (May 2016), available at

previous version recommended a 20-year life.²⁸ As noted above, ADEQ used a 20-year remaining useful life in its cost calculations in the Cholla SIP Revision, which was consistent with the current CCM recommendation at the time of SIP submittal in October 2015. Given that the majority of other BART analyses, including the EPA’s analysis for Cholla in the Arizona Regional Haze FIP,²⁹ have used a 20-year remaining useful life for SCR, we believe that this remains an appropriate assumption in this instance in order to ensure a consistent comparison with the cost estimates for SCR in other BART determinations. Nonetheless, we have also conducted an additional analysis to evaluate how use of a 30-year remaining useful life would affect the cost-effectiveness values for SCR at Cholla Units 3 and 4. We found that use of a 30-year remaining useful life would increase the average cost-effectiveness of SCR at Unit 3 from \$6,286/ton to \$7,864/ton and the “incremental” cost-effectiveness (as compared with LNB+SOFA) from \$9,237/ton to \$11,295/ton.³⁰ The average and “incremental” (as compared with LNB+SOFA) cost-effectiveness of SCR at Unit 4 would be increased from \$6,810/ton to \$8,401/ton and from \$10,539 to \$12,674, respectively.³¹ Thus, if ADEQ had calculated the average and incremental cost-effectiveness of SCR based on a 30-year remaining useful life, it would have provided further support for ADEQ’s determination that the incremental costs of compliance for SCR are not warranted by the incremental benefits.

With regard to visibility modeling, in its previous BART analysis for Cholla, ADEQ

https://www3.epa.gov/ttn/ecas/docs/SCRCostManualchapter7thEdition_2016.pdf.

²⁷ See *id.* at 2-78 (“broadly speaking, a representative value of the equipment life for SCR at power plants can be considered as 30 years.”)

²⁸ CCM (6th edition), Section 4.2, Chapter 2 - Selective Catalytic Reduction (October 2000), available at <https://www3.epa.gov/ttn/ecas/docs/cs4-2ch2.pdf>, at 2-48 (“An economic lifetime of 20 years is assumed for the SCR system.”)

²⁹ See 77 FR 42854

³⁰ See Cholla_SCR_costs (30 yr life).xlsx

³¹ *Id.*

considered the benefits from controls on only one emitting unit at a time and overlooked significant benefits at multiple Class I areas, thereby understating the full visibility benefits of the candidate controls.³² By contrast, in the Cholla SIP revision, ADEQ looked at the visibility impacts and potential improvements from all three BART-eligible units together and also considered impacts and potential improvements at all 13 Class I areas within 300 km of Cholla, based on modeling performed by APS and PacifiCorp.³³

In considering the results of this modeling, it should be noted that the baseline scenario included emissions from Unit 2, but the control scenarios did not include any emissions from Unit 2. As a result, the total visibility improvement anticipated under each of the control scenarios represents not only the visibility benefits of controls on Units 3 and 4, but also the visibility benefits of the closure of Unit 2. We consider this to be a reasonable approach because it is consistent with the requirement of the BART Guidelines for states to consider the visibility improvement from controls applied to the entire BART-eligible source.³⁴ However, given that ADEQ is not making a BART determination for Unit 2 in this instance, we believe it is appropriate to also consider the visibility improvement expected to result from controls on Units 3 and 4 only. ADEQ's evaluation of the "incremental" visibility benefits of SNCR ("Option 2 over Option 1" in Table 4) and SCR ("Option 3 over Option 1" in Table 4) effectively excludes the benefits of the Unit 2 shutdown because Options 1, 2, and 3 all exclude emissions from Unit 2. Given that ADEQ

³² See 77 FR 42849.

³³ See, e.g., Cholla SIP Revision, Table 4 and 5.

³⁴ In particular, the BART Guidelines explain that, "[i]f the emissions from the list of emissions units at a stationary source exceed a potential to emit of 250 tons per year for any visibility-impairing pollutant, then that collection of emissions units is a BART-eligible source." 40 CFR part 51, appendix Y, section II.A.4. In other words, the BART-eligible source (the list of BART emissions units at a source) is the collection of units for which one must make a BART determination. The BART Guidelines also state "you must conduct a visibility improvement determination for the source(s) as part of the BART determination." *Id.*, section IV.D.5. This requires consideration of the visibility improvement from BART applied to the BART-eligible source as a whole.

relied heavily on these “incremental” visibility benefits in reaching its ultimate BART determination,³⁵ we find that ADEQ appropriately considered the visibility benefits of controls on Units 3 and 4 only, as well as the benefits of the Cholla BART Reassessment as a whole.

We also note that ADEQ did not quantify the expected visibility benefits of SCR and SNCR on Units 3 and 4 after these units are converted to gas in 2025, but characterized these benefits as “negligible.” In order to evaluate ADEQ’s characterization, we scaled the modeled visibility benefits of SCR under the coal-fired scenario to roughly estimate what the benefits would be under the gas-fired scenario. The results of this scaling indicate that, under the gas-fired scenario, the approximate benefits of SNCR would be 0.07 dv at the most-improved Class I area and 0.31 dv cumulatively over all affected Class I areas, while the approximate benefits of SCR would be 0.15 dv at the most-improved Class I area and 0.77 dv cumulatively over all affected Class I areas.³⁶ Thus, the benefits of SNCR or SCR under the gas-fired scenario would be significantly less than under the coal-fired scenario, for which the expected “incremental” benefits over LNB+SOFA are 0.28 dv at the most-improved area and 1.32 dv cumulative for SNCR and 0.79 dv at the most-improved Class I area and 3.97 dv cumulative for SCR.

In the Cholla SIP Revision, ADEQ also appropriately accounted for the requirements that will apply to Units 3 and 4 as of 2025, i.e., the permanent cessation of coal burning by April 30, 2025, with the option to convert to pipeline-quality natural gas and comply with a 20 percent annual average capacity factor limit by July 31, 2025. These new requirements significantly decrease the emission reductions achievable by SCR or SNCR beginning in 2025 and thus increase the average \$/ton of both SCR and SNCR over the remaining useful life of the units, as shown in

³⁵ See Cholla SIP Revision section 2.3.

³⁶ See Cholla_SCR_vs_NG rev2.xlsx

Tables 1 and 2 above. Similarly, these requirements limit the timeframe in which significant visibility benefits would result from either SCR or SNCR to less than eight years.

We note that ADEQ did diverge slightly from the BART Guidelines in its calculation of the incremental cost-effectiveness of SCR. In particular, ADEQ calculated the incremental cost, as well as incremental visibility benefits, based on a comparison between SCR with LNB+SOFA and LNB+SOFA only. This differs from the approach to calculating incremental cost-effectiveness that is set forth in the BART Guidelines, under which incremental cost-effectiveness is calculated by comparing “the costs and performance level of a control option *to those of the next most stringent option . . .*”³⁷ In this case, SNCR with LNB+SOFA is the next most stringent option compared to SCR with LNB+SOFA. Had ADEQ compared SCR with LNB+SOFA to SNCR with LNB+SOFA, the incremental cost-effectiveness using a 20-year remaining useful life would have been \$10,347/ton for Unit 3 and \$12,295/ton for Unit 4,³⁸ rather than \$9,237/ton for Unit 3 and \$10,539/ton for Unit 4. Similarly, had ADEQ calculated the incremental visibility benefits of SCR with LNB+SOFA based on a comparison to SNCR with LNB+SOFA, the per area incremental benefits would have ranged from 0.01 dv to 0.51 dv, rather than 0.07 dv to 0.79 dv, and the cumulative incremental benefit would have been 2.65 dv rather than 3.97 dv.³⁹ Thus, if ADEQ had calculated the incremental costs and benefits of SCR in accordance with the BART Guidelines, it would have resulted in higher incremental cost-effectiveness values and lower incremental visibility benefits compared with the figures provided in the Cholla SIP Revision, which would provide further support for ADEQ’s determination that the incremental costs of compliance for

³⁷ 40 CFR part 51 appendix Y, section IV.D.4.e (emphasis added). The BART Guidelines do not specify a method for calculating incremental visibility benefits. We consider it appropriate to calculate these benefits in the same manner as incremental costs, i.e. by comparing the expected benefits of a control option to those of the next most stringent option.

³⁸ Cholla Units 3 and 4 Incremental Costs and Benefits.xlsx

³⁹ *Id.*

SCR are not warranted by the incremental benefits. Accordingly, in reviewing the reasonableness of ADEQ's re-analysis of BART for these units, we find that ADEQ's diversion from the BART Guidelines in this regard was of no consequence.

Based on our findings that the Cholla SIP Revision addresses the flaws that were the basis for our disapproval of ADEQ's prior BART analysis for Cholla and otherwise meets the requirements of the CAA, RHR, and the BART Guidelines, we propose to approve ADEQ's BART re-analysis for Cholla Units 3 and 4.

C. The EPA's Evaluation of ADEQ's BART Determination for Cholla Units 3 and 4

We also find that ADEQ's BART determination for NO_x at Cholla Units 3 and 4 is consistent with the requirements of the CAA, RHR, and the BART Guidelines. In particular, we find that ADEQ appropriately considered and weighed the five BART factors in relation to the available control options and reached a reasonable BART determination based on its consideration of the factors.

With regard to SCR, we find that it was reasonable for ADEQ to conclude that the costs of SCR were not warranted by the visibility benefits in this instance. In particular, with regard to costs, we are not aware of any instance in which the EPA has determined SCR to be BART where the average cost-effectiveness of SCR was greater than \$6,000/ton and the incremental cost-effectiveness (calculated in accordance with the BART Guidelines) was greater than \$10,000/ton, as is the case with Cholla Units 3 and 4. Similarly, we are not aware of any instance in which the EPA has disapproved a state's BART determination that rejected SCR as BART based on similar cost-effectiveness values. Furthermore, while the total visibility benefits of the SCR-based control scenario ("BART Option 3") are large (2.20 dv at the most improved area and 17.89 dv cumulative across all affected areas), as noted in the previous section, these benefits

include not only the effect of SCR installation on Units 3 and 4, but also the retirement of Unit 2. Thus, we believe it was appropriate for ADEQ to focus primarily on what it characterized as the “incremental” visibility benefits, i.e., the relative degree of visibility improvement expected under Option 3 (Unit 2 retired and SCR with LNB+SOFA on Units 3 and 4) compared with Option 1 (Unit 2 retired and LNB+SOFA on Units 3 and 4), which were 0.07 dv to 0.79 dv per area and 3.97 dv cumulative.⁴⁰ While these benefits are significant, we believe it was reasonable for ADEQ to determine that the benefits were not warranted in light of the high costs of SCR and the fact that benefits of this magnitude would only last for approximately eight years, after which the benefits of SCR would be far less (roughly 0.15 dv at the most-improved Class I area and 0.77 dv cumulatively over all affected Class I areas).

With regard to SNCR, we find that it was reasonable for ADEQ to conclude that the costs of SNCR were not warranted by the visibility benefits. In particular, with regard to costs, we are not aware of any instance in which the EPA has determined SNCR to be BART where the average cost-effectiveness of SNCR was greater than \$3,000/ton and the incremental cost-effectiveness was roughly \$7,000/ton, as is the case with Cholla Units 3 and 4. Similarly, we are not aware of any instance in which the EPA has disapproved a state’s BART determination that rejected SNCR as BART based on similar cost-effectiveness values. Furthermore, while the total visibility benefits of the SNCR-based control scenario (“BART Option 2”) are large (1.78 dv at the most improved area and 15.24 dv cumulative across all affected areas), as noted above, these benefits include not only the effect of SNCR installation on Units 3 and 4, but also the retirement of Unit 2. Thus, we believe it was appropriate for ADEQ to focus primarily on incremental visibility

⁴⁰ As described in the previous section, if ADEQ had calculated the incremental benefits of SCR in accordance with the BART Guidelines, the per area incremental benefits would have ranged from 0.01 dv to 0.51 dv, and the cumulative incremental benefit would have been 2.65 dv.

benefits, i.e., the relative degree of visibility improvement expected under Option 2 (Unit 2 retired and SNCR with LNB+SOFA on Units 3 and 4) compared with Option 1 (Unit 2 retired and LNB+SOFA on Units 3 and 4), which were 0.01 dv to 0.28 dv per area and 1.32 dv cumulative. While these benefits are not insignificant, we believe it was reasonable for ADEQ to determine that the benefits were not warranted in light of the relatively high costs of SNCR and the fact that benefits of this magnitude would only last for approximately eight years, after which the benefits of SNCR would be far less (roughly 0.07 dv at the most-improved Class I area and 0.31 dv cumulatively over all affected Class I areas).

Therefore, we propose to approve ADEQ's determination that BART for NO_x at Cholla Units 3 and 4 consists of LNB+SOFA with associated emission limits of 0.22 lb/MMBtu (rolling 30-boiler-operating-day average) for each unit. As explained above, these emission limits will remain in effect until April 30, 2025, at which point both units will be permanently retired or converted to natural gas with NO_x emission limits of 0.08 lb/MMBtu (rolling 30-boiler-operating-day average).

D. The EPA's Evaluation Under CAA Section 110(l)

CAA section 110(l) requires that any revision to an implementation plan shall not be approved by the EPA Administrator if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (RFP) or any other applicable requirement of the Act.⁴¹ In evaluating whether the Cholla SIP Revision would interfere with any CAA requirements, we note that overall, the Cholla SIP Revision will result in reduced emissions of both SO₂ and PM₁₀ compared to the existing SIP and FIP requirements beginning in 2016 (see Tables 6 and 7 above) due to the retirement of Unit 2. While the Cholla SIP Revision will require

⁴¹ CAA Section 110(l), 42 U.S.C. 7410(l).

fewer NO_x reductions than the FIP between 2018 and 2025, it will ensure that NO_x emissions remain at or below current levels (i.e., levels consistent with non-operation of Unit 2⁴² and operation of LNB and SOFA on Units 1, 3 and 4) until 2025, after which it will require a substantial reduction in NO_x emissions compared to both current levels and the FIP (see Table 8 above).

With regard to applicable requirements concerning attainment and RFP, as explained by ADEQ, Cholla is located in north central Navajo County, Arizona, which is designated as unclassifiable/attainment for all of the NAAQS for which the EPA has issued designations.⁴³ ADEQ also indicated that it has recommended an attainment/unclassifiable designation for this area for the 2012 PM_{2.5} and 2010 SO₂ standards. With regard to the 2012 PM_{2.5} standard, the EPA has finalized a designation of unclassifiable/attainment for Navajo County.⁴⁴ With regard to the 2010 SO₂ standard, we note that, under the EPA's Data Requirements Rule,⁴⁵ ADEQ is required to develop and submit air quality data characterizing ambient concentrations of SO₂ in the area around Cholla.⁴⁶ The EPA will take these data into consideration in finalizing a designation for the area. Finally, we note that, on October 1, 2015, the EPA promulgated revised primary and secondary ozone NAAQS.⁴⁷ State designation recommendations for the 2015 ozone NAAQS are due to the EPA by October 1, 2016.⁴⁸

In summary, Cholla is located in area that is designated unclassifiable/attainment or has not

⁴² As shown in Table 8, ADEQ projected that total NO_x emissions at Cholla Unit 2 would be 900 tpy in 2016, based on a Unit 2 shutdown date of April 1, 2016. Because Unit 2 was retired in October 2015, 2016 emissions from Unit 2 will actually be zero, so we anticipate the total NO_x emissions from the facility will be roughly 7,445 tpy for all years between 2016 and 2025.

⁴³ Cholla SIP Revision, pages 12-13, Table 7.

⁴⁴ See 40 CFR 81.303.

⁴⁵ 40 CFR part 51, subpart BB.

⁴⁶ See Letter from Eric Massey, ADEQ, to Doris Lo, EPA (January 13, 2016).

⁴⁷ 80 FR 65292 (October 26, 2015).

⁴⁸ *Id.* at 65438.

yet been designated for each of the current NAAQS. Thus, the Arizona SIP does not currently rely on emission limitations at Cholla to satisfy any attainment or RFP requirements. Given that the Cholla SIP Revision will result in equivalent or lower emissions of NO_x, PM₁₀ and SO₂ for all future years, compared to current emission levels, in an area that is designated unclassifiable/attainment or has not yet been designated for all NAAQS, we propose to find that the Cholla SIP Revision would not interfere with any applicable requirements concerning attainment or RFP.

The other requirements of the CAA that apply to Cholla are:

- Standards of Performance for New Stationary Sources (NSPS), 40 CFR part 60, subpart D;
- National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR part 63, subpart UUUUU (also known as MATS);
- Compliance Assurance Monitoring (CAM), 40 CFR part 64; and
- BART and other visibility protection requirements under CAA section 169A and the RHR.

The Cholla SIP Revision would not affect the applicable NESHAP, NSPS and CAM requirements. Therefore, we propose to find that the Cholla SIP Revision would not interfere with the applicable NESHAP, NSPS and CAM requirements.

We also propose to find that Cholla SIP Revision would not interfere with the visibility protection requirements of the CAA and the RHR. Our proposed approval of the BART Reassessment is based on our determination that, taking into consideration the differences in the facts underlying the EPA's prior BART analysis for NO_x in Arizona Regional Haze FIP and the Cholla BART Reassessment, ADEQ's revised BART analysis and determination for Cholla meet

the BART requirements of the CAA and RHR. Furthermore, the Cholla SIP Revision would result in greater visibility improvement than the existing SIP and FIP requirements beginning in 2026, which is consistent with the long-term national goal of restoring natural visibility conditions at Class I areas. Thus, we propose to find that the Cholla SIP Revision would not interfere with the visibility protection requirements of the CAA.

E. The EPA's Evaluation of Enforceable Emission Limits

CAA section 110(a)(2)(A) requires SIPs to include enforceable emission limitations as necessary or appropriate to meet the applicable requirements of the Act. In addition, SIPs must contain regulatory requirements related to monitoring, recordkeeping, and reporting for applicable emission limitations.⁴⁹ The Cholla Permit Revision includes such enforceable emission limits, as well as associated monitoring, recordkeeping, and reporting requirements, for all units and pollutants. These requirements will become effective and federally enforceable when the Cholla SIP Revision is approved into the SIP and the FIP provisions applicable to Cholla are withdrawn.⁵⁰ Therefore, we propose to find that the Cholla SIP Revision meets the requirements of the CAA and the EPA's implementing regulations for enforceable emission limitations.

V. Proposed Action

For the reasons described above, the EPA proposes to approve the Cholla SIP Revision. Because this approval would fill the gap in the Arizona Regional Haze SIP left by the EPA's prior partial disapproval with respect to Cholla, we propose to withdraw the provisions of the Arizona Regional Haze FIP that apply to Cholla. We also propose to find that withdrawal of the FIP would constitute our action on APS's and PacifiCorp's petitions for reconsideration of the Arizona

⁴⁹ See, e.g., CAA section 110(a)(2)(F) and 40 CFR 51.212(c).

⁵⁰ Cholla Permit Revision section I.A.

Regional Haze FIP.

VI. Environmental Justice Considerations

As shown in Tables 6 and 7, the Cholla SIP Revision will result in reduced emissions of both SO₂ and PM₁₀ compared to the existing SIP and FIP requirements beginning in 2016. As shown in Table 8, while the Cholla SIP Revision will result in fewer NO_x reductions than the FIP between 2018 and 2025, it will ensure that NO_x emissions remain at or below current levels until 2025, after which it will require a substantial reduction in NO_x emissions compared to both current levels and to the existing Arizona Regional Haze FIP. Therefore, the EPA believes that this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income, or indigenous populations.

VII. Incorporation by Reference

In this rule, the EPA is proposing to include in a final EPA rule, regulatory text that includes incorporation by reference. In accordance with requirements of 1 CFR 51.5, the EPA is proposing to incorporate by reference “Significant Permit Revision No. 61713 to Operating Permit No. 53399” issued by ADEQ on October 16, 2015. The EPA has made, and will continue to make, this document available electronically through www.regulations.gov and in hard copy at U.S. Environmental Protection Agency Region IX, Air-2, 75 Hawthorne Street, San Francisco, CA, 94105-3901.

VIII. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review. This rule applies to only one facility and is therefore not a rule of general applicability.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA. This rule applies to only one facility. Therefore, its recordkeeping and reporting provisions do not constitute a "collection of information" as defined under 44 U.S.C. 3502(3) and 5 CFR 1320.3(c).

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities. This action will not impose any requirements on small entities. Firms primarily engaged in the generation, transmission, and/or distribution of electric energy for sale are small if, including affiliates, the total electric output for the preceding fiscal year did not exceed 4 million megawatt hours. Both owners of Cholla, APS and PacifiCorp, exceed this threshold.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of \$ 100 million or more as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175. It will not have substantial direct effects on any Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets EO 13045 as applying only to those regulatory actions that concern health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211 because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

This rulemaking does not involve technical standards. The EPA is not revising any technical standards or imposing any new technical standards in this action.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes the human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on

minority, low-income, or indigenous populations. The results of this evaluation are contained in section VI above.

K. Determination Under Section 307(d)

Pursuant to CAA section 307(d)(1)(B), the EPA proposes to determine that this action is subject to the provisions of section 307(d). Section 307(d) establishes procedural requirements specific to certain rulemaking actions under the CAA. Pursuant to CAA section 307(d)(1)(B), the withdrawal of the provisions of the Arizona Regional Haze FIP that apply to Cholla is subject to the requirements of CAA section 307(d), as it constitutes a revision to a FIP under CAA section 110(c). Furthermore, CAA section 307(d)(1)(V) provides that the provisions of section 307(d) apply to “such other actions as the Administrator may determine.” The EPA proposes that the provisions of 307(d) apply to the EPA’s action on the Cholla SIP revision.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Visibility.

Authority: 42 U.S.C. 7401 et seq.

Dated: June 30, 2016.

Deborah Jordan,
Acting Regional Administrator,
EPA Region IX.

PART 52--APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 et seq.

Subpart D--Arizona

2. In §52.145, revise paragraphs (f)(1), (2), (3), (4), (5), and (10) to read as follows:

§ 52.145 Visibility protection.

* * * * *

(f) * * *

(1) *Applicability.* This paragraph (f) applies to each owner/operator of the following coal-fired electricity generating units (EGUs) in the state of Arizona: Coronado Generating Station, Units 1 and 2. The provisions of this paragraph (f) are severable, and if any provision of this paragraph (f), or the application of any provision of this paragraph (f) to any owner/operator or circumstance, is held invalid, the application of such provision to other owner/operators and other circumstances, and the remainder of this paragraph (f), shall not be affected thereby.

(2) *Definitions.* Terms not defined below shall have the meaning given to them in the Clean Air Act or EPA's regulations implementing the Clean Air Act. For purposes of this paragraph (f):
ADEQ means the Arizona Department of Environmental Quality.

Boiler-operating day means a 24-hour period between 12 midnight and the following midnight during which any fuel is combusted at any time in the unit.

Coal-fired unit means any of the EGUs identified in paragraph (f)(1) of this section.

Continuous emission monitoring system or CEMS means the equipment required by 40 CFR part 75 and this paragraph (f).

Emissions limitation or emissions limit means any of the Federal Emission Limitations required by

this paragraph (f) or any of the applicable PM₁₀ and SO₂ emissions limits for Coronado Generating Station submitted to EPA as part of the Arizona Regional Haze SIP in a letter dated February 28, 2011, and approved into the Arizona State Implementation Plan on December 5, 2012.

Flue Gas Desulfurization System or FGD means a pollution control device that employs flue gas desulfurization technology, including an absorber utilizing lime, fly ash, or limestone slurry, for the reduction of sulfur dioxide emissions.

lb means pound(s).

NO_x means nitrogen oxides expressed as nitrogen dioxide (NO₂).

Owner(s)/operator(s) means any person(s) who own(s) or who operate(s), control(s), or supervise(s) one or more of the units identified in paragraph (f)(1) of this section.

MMBtu means million British thermal unit(s).

Operating hour means any hour that fossil fuel is fired in the unit.

PM₁₀ means filterable total particulate matter less than 10 microns and the condensable material in the impingers as measured by Methods 201A and 202 in 40 CFR part 51, appendix M.

Regional Administrator means the Regional Administrator of EPA Region IX or his/her authorized representative.

SO₂ means sulfur dioxide.

SO₂ removal efficiency means the quantity of SO₂ removed as calculated by the procedure in paragraph (f)(5)(iii)(B) of this section.

Unit means any of the EGUs identified in paragraph (f)(1) of this section.

Valid data means data recorded when the CEMS is not out-of-control as defined by 40 CFR part 75.

(3) *Federal emission limitations*—(i) *NO_x emission limitations*. The owner/operator of each

coal-fired unit subject to this paragraph (f) shall not emit or cause to be emitted NO_x in excess of the following limitations, in pounds per million British thermal units (lb/MMBtu) from any coal-fired unit or group of coal-fired units. Each emission limit shall be based on a rolling 30-boiler-operating-day average, unless otherwise indicated in specific paragraphs.

Coal fired unit or group of coal-fired units	Federal emission limitation
Coronado Generating Station Unit 1	0.065
Coronado Generating Station Unit 2	0.080

(ii) [Reserved]

(4) *Compliance dates.* (i) The owners/operators of each unit subject to this paragraph (f) shall comply with the NO_x emissions limitations and other NO_x-related requirements of this paragraph (f) no later than December 5, 2017.

(ii) The owners/operators of each unit subject to this paragraph (f) shall comply with the applicable PM₁₀ and SO₂ emissions limits submitted to EPA as part of the Arizona Regional Haze SIP in a letter dated February 28, 2011, and approved into the Arizona State Implementation Plan on December 5, 2012, as well as the related compliance, recordkeeping and reporting of this paragraph (f) no later than June 3, 2013.

(5) *Compliance determinations for NO_x and SO₂...*(i) *Continuous emission monitoring system.*

(A) At all times after the compliance date specified in paragraph (f)(4) of this section, the owner/operator of each coal-fired unit shall maintain, calibrate, and operate a CEMS, in full compliance with the requirements found at 40 CFR part 75, to accurately measure SO₂, NO_x, diluent, and stack gas volumetric flow rate from each unit. In addition, the owner/operator of Cholla Units 2, 3, and 4 shall calibrate, maintain, and operate a CEMS, in full compliance with the

requirements found at 40 CFR part 75, to accurately measure SO₂ emissions and diluent at the inlet of the sulfur dioxide control device. All valid CEMS hourly data shall be used to determine compliance with the emission limitations for NO_x and SO₂ in paragraph (f)(3) of this section for each unit. When the CEMS is out-of-control as defined by 40 CFR part 75, that CEMS data shall be treated as missing data, and not used to calculate the emission average. Each required CEMS must obtain valid data for at least 90 percent of the unit operating hours, on an annual basis.

(B) The owner/operator of each unit shall comply with the quality assurance procedures for CEMS found in 40 CFR part 75. In addition to these 40 CFR part 75 requirements, relative accuracy test audits shall be calculated for both the NO_x and SO₂ pounds per hour measurement and the heat input measurement. The CEMS monitoring data shall not be bias adjusted. The inlet SO₂ and diluent monitors required by this rule shall also meet the Quality Assurance/Quality Control (QA/QC) requirements of 40 CFR part 75. The testing and evaluation of the inlet monitors and the calculations of relative accuracy for lb/hr of NO_x, SO₂ and heat input shall be performed each time the 40 CFR part 75 CEMS undergo relative accuracy testing.

(ii) *Compliance determinations for NO_x.*

(A) [Reserved]

(B) *Coronado Generating Station.* Compliance with the NO_x emission limits for Coronado Unit 1 and Coronado Unit 2 in paragraph (f)(3)(i) of this section shall be determined on a rolling 30 boiler-operating-day basis. The 30-boiler-operating-day rolling NO_x emission rate for each unit shall be calculated in accordance with the following procedure: Step one, sum the total pounds of NO_x emitted from the unit during the current boiler operating day and the previous twenty-nine (29) boiler operating days; Step two, sum the total heat input to the unit in MMBtu during the current boiler operating day and the previous twenty-nine (29) boiler operating days; Step three,

divide the total number of pounds of NO_x emitted from that unit during the thirty (30) boiler operating days by the total heat input to the unit during the thirty (30) boiler operating days. A new 30-boiler-operating-day rolling average NO_x emission rate shall be calculated for each new boiler operating day. Each 30-boiler-operating-day average NO_x emission rate shall include all emissions that occur during all periods within any boiler operating day, including emissions from startup, shutdown, and malfunction.

(C) If a valid NO_x pounds per hour or heat input is not available for any hour for a unit, that heat input and NO_x pounds per hour shall not be used in the calculation of the 30-day rolling average.

(iii) *Compliance determinations for SO₂*. (A) The 30-day rolling average SO₂ emission rate for each coal-fired unit shall be calculated in accordance with the following procedure: Step one, sum the total pounds of SO₂ emitted from the unit during the current boiler-operating day and the previous twenty-nine (29) boiler-operating days; step two, sum the total heat input to the unit in MMBtu during the current boiler-operating day and the previous twenty-nine (29) boiler-operating day; and step three, divide the total number of pounds of SO₂ emitted during the thirty (30) boiler-operating days by the total heat input during the thirty (30) boiler-operating days. A new 30-day rolling average SO₂ emission rate shall be calculated for each new boiler-operating day. Each 30-day rolling average SO₂ emission rate shall include all emissions and all heat input that occur during all periods within any boiler-operating day, including emissions from startup, shutdown, and malfunction.

(B) [Reserved]

(C) If a valid SO₂ pounds per hour at the outlet of the FGD system or heat input is not available for any hour for a unit, that heat input and SO₂ pounds per hour shall not be used in the calculation of the 30-day rolling average.

(D) If both a valid inlet and outlet SO₂ lb/MMBtu and an outlet value of lb/hr of SO₂ are not available for any hour, that hour shall not be included in the efficiency calculation.

* * * * *

(10) *Equipment operations.*

(i) [Reserved]

(ii) *Coronado Generating Station.* At all times, including periods of startup, shutdown, and malfunction, the owner or operator of Coronado Generating Station Unit 1 and Unit 2 shall, to the extent practicable, maintain and operate each unit in a manner consistent with good air pollution control practices for minimizing emissions. The owner or operator shall continuously operate pollution control equipment at all times the unit it serves is in operation, and operate pollution control equipment in a manner consistent with technological limitations, manufacturer's specifications, and good engineering and good air pollution control practices for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Regional Administrator which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of each unit.

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